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10/585,865	07/11/2006	Koichi Miyachi	1035-644	7753
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EXAMINER				
HICKS, CHARLES V				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/585,865

**Applicant(s)**

MIYACHI ET AL.

**Examiner**

CHARLES HICKS

**Art Unit**

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This communication is in response to amendments filed 07/14/09. Claims 4, 5 and 15 have been amended. Claims 16-21 are new. Claims 1-21 are currently pending.

#### ***Claim Objections***

Claim 14 is objected to because of the following informalities: Claim 14 recites the limitation "smetic blue phase". Examiner believes this is a misspelling of "smectic blue phase" and will interpret claim 14 to read "smectic blue phase" for the purpose of this examination.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4, 6, 9, 15, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamaguchi et al. (US 6,266,109).

In reference to claim 1, Yamaguchi teaches a display apparatus, comprising display elements including a medium injected and sealed between a pair of substrates at least one of which is transparent (Yamaguchi, col. 11, ll. 39-46),

the medium changing in magnitude of optical anisotropy upon application of voltage (Yamaguchi, Abstract; col. 1, ll. 45-50),

each of the display elements containing colors required to produce a color image display, so as to produce a color image display (Yamaguchi, col. 1, ll. 9-12),

different voltages being applied to the display elements so as to display the colors required to produce a color image display with an identical gradation (Yamaguchi, col. 13, ll. 44-59).

Claim 3 is rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi teaches wherein the colors required to produce a color image display are three colors of RGB (Yamaguchi, col. 13, ll. 37-40).

In reference to claim 4, Yamaguchi teaches a display apparatus, comprising: display elements including a medium injected and sealed between a pair of substrates at least one of which is transparent (Yamaguchi, col. 11, ll. 39-46),

the medium changing in magnitude of optical anisotropy upon application of voltage (Yamaguchi, Abstract; col. 1, ll. 45-50),

each of the display elements containing colors to produce a color image display, so as to produce a color image display (Yamaguchi, col. 1, ll. 9-12),

different voltages being applied to the display elements so as to display the colors required to produce a color image display with an identical gradation (Yamaguchi, col. 13, ll. 44-59),

and wherein the medium exhibits optical isotropy in absence of an electric field and exhibits optical anisotropy under applied voltage (Yamaguchi, col. 3, ll. 21-35).

Claim 6 is rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi teaches wherein the medium is comprised by molecules having an ordered structure less than optical wavelengths either under applied voltage or in absence of applied voltage (Yamaguchi, col. 9, ll. 51-58).

Claim 9 is rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi teaches wherein the medium is comprised by a liquid crystal microemulsion (Yamaguchi, col. 5, ll. 24-40; col. 6, ll. 45-64).

In reference to claim 15, Yamaguchi teaches a display element in a display apparatus (Yamaguchi, col. 11, ll. 39-46),

comprising: each display element containing colors required to produce a color image display, so as to produce a color image display (Yamaguchi, col. 1, ll. 9-12),

different voltages being applied to the display elements so as to display the colors required to produce a color image display with an identical gradation (Yamaguchi, col. 13, ll. 44-59),

a medium being injected and sealed between a pair of substrates at least one of which is transparent (Yamaguchi, col. 11, ll. 39-46),

the medium changing in magnitude of optical anisotropy upon application of voltage (Yamaguchi, Abstract; col. 1, ll. 45-50).

Claim 17 is rejected as being dependent on rejected claim 4 as discussed above and further, Yamaguchi teaches wherein the colors required to produce a color image display are the three colors of RGB (Yamaguchi, col. 13, ll. 37-40).

Claim 18 is rejected as being dependent on rejected claim 4 as discussed above and further, Yamaguchi teaches wherein the medium is comprised by molecules having an ordered structure less than the optical wavelengths either under applied voltage or in absence of applied voltage (Yamaguchi, col. 9, ll. 51-58).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 8, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (US 6,266,109) in view of Takeuchi et al. (US 2001/0024178).

Claim 2 is rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi however fails to teach wherein the voltages applied are determined based on a lookup table which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements.

Takeuchi discloses a display system, analogous in art with that of Yamaguchi, wherein the voltages applied are determined based on a lookup table which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements (Takeuchi, pg. 22, par. 378-379).

At the time the invention was made, it would have been obvious to one having ordinary skill in the art to modify the display devise of Yamaguchi wherein the voltages applied are determined based on a lookup table which associates gradations of an

image displayed by the display apparatus with the voltages applied to the display elements, as taught by Takeuchi.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been a display with memory and table creation for storing luminance correction data for correcting a luminance dispersion of the display (Takeuchi, pg. 3, par. 37).

Claim 8 is rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi however fails to teach wherein the medium is comprised by molecules showing a cubic phase or a smectic D phase.

Takeuchi discloses a display system, analogous in art with that of Yamaguchi, wherein the medium is comprised by molecules showing a cubic phase or a smectic D phase (Takeuchi, pg. 8, par. 170).

At the time the invention was made, it would have been obvious to one having ordinary skill in the art to modify the display devise of Yamaguchi wherein the medium is comprised by molecules showing a cubic phase or a smectic D phase, as taught by Takeuchi.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been the addition of strength, toughness, and durability (Takeuchi, pg. 8, par. 170).



Claim 16 is rejected as being dependent on rejected claim 4 as discussed above and further, Yamaguchi however fails to teach wherein the voltages applied are determined based on a lookup table which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements.

Takeuchi discloses a display system, analogous in art with that of Yamaguchi, wherein the voltages applied are determined based on a lookup table which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements (Takeuchi, pg. 22, par. 378-379).

At the time the invention was made, it would have been obvious to one having ordinary skill in the art to modify the display devise of Yamaguchi wherein the voltages applied are determined based on a lookup table which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements, as taught by Takeuchi.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been a display with memory and table creation for storing luminance correction data for correcting a luminance dispersion of the display (Takeuchi, pg. 3, par. 37).

Claims 5, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (US 6,266,109) in view of Yoo et al. (US 6,636,289).

In reference to claim 5, Yamaguchi teaches a display apparatus, comprising: display elements including a medium injected and sealed between a pair of substrates at least one of which is transparent (Yamaguchi, col. 11, ll. 39-46),

the medium changing in magnitude of optical anisotropy upon application of voltage (Yamaguchi, Abstract; col. 1, ll. 45-50),

each of the display elements containing colors to produce a color image display, so as to produce a color image display (Yamaguchi, col. 1, ll. 9-12),

different voltages being applied to the display elements so as to display the colors required to produce a color image display with an identical gradation (Yamaguchi, col. 13, ll. 44-59).

Yamaguchi however fails to teach wherein the medium exhibits optical anisotropy in absence of an electric field and exhibits optical isotropy under applied voltage.

Yoo discloses a liquid crystal display medium, analogous in art with that of Yamaguchi, wherein the medium exhibits optical anisotropy in absence of an electric field and exhibits optical isotropy under applied voltage (Yoo, col. 1, ll. 19-30; Fig. 24A, col. 16, ll. 20-34).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the liquid crystal medium of Yamaguchi wherein the medium exhibits optical anisotropy in absence of an electric field and exhibits optical isotropy under applied voltage, as taught by Yoo.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to achieve a fast response time (Yoo, col. 6, ll. 1-7).

Claim 20 is rejected as being dependent on rejected claim 5 as discussed above and further, Yamaguchi modified by Yoo teaches wherein the colors required to produce a color image display are three colors of RGB (Yamaguchi, col. 13, ll. 37-40).

Claim 21 is rejected as being dependent on rejected claim 5 as discussed above and further, Yamaguchi modified by Yoo teaches wherein the medium is comprised by molecules having an ordered structure less than optical wavelengths either under applied voltage or in the absence of applied voltage (Yamaguchi, col. 9, ll. 51-58).

Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (US 6,266,109) in view of Haertling (US 4,636,786).

Claim 7 is rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi however fails to teach wherein the medium has an ordered structure showing cubic symmetry.

Haertling discloses a display device medium, analogous in art with that of Yamaguchi, wherein the medium has an ordered structure showing cubic symmetry (Haertling, col. 2, ll. 65-col. 3, ll. 6).

At the time the invention was made, it would have been obvious to one having ordinary skill in the art to modify the display device medium of Yamaguchi wherein the medium has an ordered structure showing cubic symmetry, as taught by Haertling.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to achieve high contrast, increased brightness, wide viewing angle, and reduced operating voltages (Haertling, col. 1, ll. 7-17).

Claim 11 is rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi however fails to disclose wherein the medium is comprised by a liquid crystal fine particle dispersion system showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase.

Haertling discloses display device medium, analogous in art with that of Yamaguchi, wherein the medium is comprised by a liquid crystal fine particle dispersion system showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase (Haertling, col. 5, ll. 43-45; col. 2, ll. 65-68).

At the time the invention was made, it would have been obvious to one having ordinary skill in the art to modify the display device medium of Yamaguchi wherein the medium is comprised by a liquid crystal fine particle dispersion system showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been a display with increased properties of brightness, greater contrast, and improved resolution (Haertling, col. 5, ll. 6-9).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (US 6,266,109) in view of Lavretovich et al. (US 6,570,632).

Claim 10 is rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi however fails to teach wherein the medium is comprised by a lyotropic liquid crystal showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase.

Lavretovich discloses a liquid crystal cell, analogous in art with that of Yamaguchi, wherein the medium is comprised by a lyotropic liquid crystal showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase (Lavretovich, col. 2, ll. 1-17; micelle phase).

At the time the invention was made, it would have been obvious to one having ordinary skill in the art to modify the liquid crystal cell of Yamaguchi to comprise a lyotropic liquid crystal showing any one of a micelle phase, a reverse micelle phase, a sponge phase, and a cubic phase, as taught by Lavretovich.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to achieve a perpendicular alignment as the preferred orientation (Lavretovich, col. 1, ll. 53-67).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (US 6,266,109) in view of Kenji (Patent Abstracts Of Japan, Publication number 09-243984).

Claim 12 is rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi however fails to teach wherein the medium is comprised by a dendrimer.

Kenji discloses a liquid crystal element, analogous in art with that of Yamaguchi, wherein the medium is comprised by a dendrimer (Kenji, Abstract).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the liquid crystal medium of Yamaguchi to comprise a dendrimer, as taught by applicants admitted prior art.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to lower the driving voltage (Kenji, Abstract).

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (US 6,266,109) in view of Sato et al. (US 2003/0039770).

Claims 13 and 14 are rejected as being dependent on rejected claim 1 as discussed above and further, Yamaguchi however fails to teach wherein the medium is comprised by molecules showing a cholesteric blue phase, and showing a smectic blue phase.

Sato discloses a liquid crystal display, analogous in art with that of Yamaguchi, wherein the medium is comprised by molecules showing a cholesteric blue phase, and a smectic blue phase (Sato, pg. 5, par. 44)

At the time the invention was made, it would have been obvious to one having ordinary skill in the art to modify the liquid crystal display of Yamaguchi, wherein the medium is comprised by molecules showing a cholesteric blue phase, and showing a smectic blue phase, as taught by Sato.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to broaden the temperature range of the display medium (Sato, pg. 5, par. 44).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (US 6,266,109) modified by Yoo et al. (US 6,636,289), and further in view of Takeuchi et al. (US 2001/0024178).

Claim 19 is rejected as being dependent on rejected claim 5 as discussed above and further, Yamaguchi modified by Yoo however fails to teach wherein the voltages applied are determined based on a lookup table which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements.

Takeuchi discloses a display system, analogous in art with that of Yamaguchi modified by Yoo, wherein the voltages applied are determined based on a lookup table

which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements (Takeuchi, pg. 22, par. 378-379).

At the time the invention was made, it would have been obvious to one having ordinary skill in the art to modify the display devise of Yamaguchi modified by Yoo wherein the voltages applied are determined based on a lookup table which associates gradations of an image displayed by the display apparatus with the voltages applied to the display elements, as taught by Takeuchi.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been a display with memory and table creation for storing luminance correction data for correcting a luminance dispersion of the display (Takeuchi, pg. 3, par. 37).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

As to claim 1 on page 7 of applicant's response, applicant argues that "the medium changing in magnitude of optical anisotropy upon application of voltage" is not inherent in a liquid crystal display.

Yamaguchi teaches the medium changing in magnitude of optical anisotropy upon application of voltage (Yamaguchi, Abstract; col. 1, ll. 45-50).



Yamaguchi teaches a liquid crystal display with optical switching elements interposed between substrates, a voltage applying means, and a liquid crystal medium exhibiting optical anisotropy.

Therefore, Yamaguchi teaches the medium changing in magnitude of optical anisotropy upon application of voltage.

Applicant further argues on page 7 of applicant's response that Lipton does not read on a color display of a liquid crystal display.

Yamaguchi teaches a color display of a liquid crystal display.

Yamaguchi teaches a liquid crystal display with optical switching elements, a liquid crystal medium partitioned into small sections, and a voltage-applying means.

Therefore, Yamaguchi teaches a color display of a liquid crystal display.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHARLES HICKS whose telephone number is 571-270-7535. The examiner can normally be reached on Monday-Thursday from 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz, can be reached on 571-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sumati Lefkowitz/  
Supervisory Patent Examiner, Art Unit 2629